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U. S. DEPARTMENT OF AGRICULTURE

Multiquart Containers--

Their Significance in Dairy Cooperatives

By William J. Monroe

FARMER COOPERATIVE SERVICE
U. S. DEPARTMENT OF AGRICULTURE
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FARMER COOPERATIVE SERVICE
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JOSEPH G. KNAPP, ADMINISTRATOR

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The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the Service relates to problems of management, organization, policies, merchandising, product quality, costs, efficiency, and membership.

The Service publishes the results of the studies; confers and advises with officials of farmer cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information relating to cooperative principles and practices.

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This study was conducted under authority of the Agricultural Marketing Act of 1946 (RMA, Title II).

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Highlights

In 1957 the Farmer Cooperative Service conducted a survey on the use of multiquart containers by dairy cooperatives distributing fluid milk. The use of these containers was still on the increase throughout the United States. About 40 percent of householders' milk was purchased in multiquart containers.

The information in this report includes the various practices and problems of the 187 cooperatives that answered the questionnaire. Most of them used both paper and glass containers. A few used only one or the other. Those using only glass containers were bottling only a small volume of milk. About 24 percent of their packaged milk was distributed in multiquart containers, mostly 1/2-gallons.

The survey showed that local firms introduced multiquart containers into a majority of the markets, usually at a lower price per quart. Cooperatives generally were not the first to introduce these containers into the markets.

Seven out of eight associations studied sold milk in multiquart containers. Over three-fourths used paper 1/2-gallons, one-third used glass 1/2-gallons, and one-fifth used gallon jugs.

Over half the managers favored the 1/2-gallon paper container from the processing standpoint, and three-fourths from a selling standpoint.

Almost half of the operators had higher total operating costs after adding multiquart container operations. A few experienced lower costs. These statements were based on over-all experience, and included the effect of rising prices of most things used in processing and distribution.

Nearly all the cooperatives sold milk in multiquart containers on their own wholesale and retail routes. Few, however, sold milk in the large containers only to other distributors and put none on their own retail or wholesale trucks.

About 70 percent of the managers of associations thought that per capita milk consumption increased when milk in multiquart containers was available to consumers. Managers gave two reasons for the increased consumption. Some said that consumption increased because consumers had more milk on hand and therefore unconsciously used more. Others thought consumption was increased primarily because of lower prices for milk in multiquart containers.

It was the consensus that the only effective method of competing was to add a multiquart operation. A few managers, however, were convinced that twin-paks (two single quarts fastened together) could compete successfully with multiquart containers. Other methods--quantity discounting and custom-packaged multiquart containers--were not favored by managers supplying information.

Multiquart Containers, Their Significance in Dairy Cooperatives

By William J. Monroe
Dairy Branch
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Significant changes have occurred in fluid milk processing and merchandising during the past 20 years. We have seen the adoption or increased use of such methods and operations as every-other-day delivery, homogenization, pasteurization, vitamins, and milk vending machines. But the most revolutionary change has come about in the use of paper and multiquart containers--1/2-gallon and gallon--for packaging milk.

Increased use of these multiquart containers, which is likely to continue, has been beneficial for both the milk industry and the consumer. The reasons for the growing use of multiquart containers are many. Some of the reasons are:

1. The emphasis on the "king-size," or "home economy-size," package for many products other than milk encourages consumer acceptance of large size containers for milk.

2. Large shopping centers are increasing and the small neighborhood grocery stores are declining. This means housewives buy in larger quantities because they go to the store less frequently.

3. Better methods of handling milk are used. Milk keeps longer without loss of quality.

4. The price structure, however, is probably the greatest influence on the increased use of larger containers. Since packaging economy affects price, the size and type of container are very important considerations.

The increased use of multiquart containers has had a tremendous impact upon the dairy industry. This has definitely resulted in reduced total costs for large-volume plants. Paper containers removed the problem of bottle deposits and returns, and thus contributed much to the shift from home deliveries to store sales of milk.

The new containers and new sizes also introduced new flexibility and variety into competitive methods in the industry. Half-gallon containers or gallon jugs could be, and often have been, used as the basis for price competition. The new competitive flexibility probably has had as much effect on the industry as the changes affecting costs and efficiency.

With these factors in mind, the Farmer Cooperative Service made a survey in 1957 of all dairy cooperatives distributing fluid milk. The purpose of the survey was to examine many of the aspects regarding the use of multiquart containers by fluid milk distributing associations and to report the findings for the assistance and guidance of these and other milk distributing firms. The problems faced by cooperatives concerning use of multiquart containers are essentially the same as problems faced by noncooperative concerns of similar size and in similar marketing areas.

We received completed questionnaires from 187 associations.[1] Of this group, 103 associations were primarily engaged in bottling and selling fluid milk. Milk distribution was a sideline activity of 84 associations, largely cooperative milk manufacturing plants.

This report discusses the various practices of the concerns surveyed, some problems associated with using multiquart containers, and opinions of managers regarding these containers.

As with many innovations, multiquart containers have both supporters and opponents among dairy cooperatives. Some of the managers expressed their views with respect to multiquart containers as follows:

"Half gallon? An economically sound and attractive package with tremendous consumer appeal."

"Will eventually eliminate the quart package entirely."

"Volume is the key to success with a multiquart operation."

"Increases plant operating costs to sell milk cheaper."

"A definite step backward."

Although this report is primarily concerned with merchandising packaged milk in multiquart containers by dairy cooperatives, some background information is discussed first to provide insight into the internal operations of milk distributing cooperatives. The characteristics of a dairy concern have direct bearing on its distribution of milk in multiquart containers.

Characteristics of Associations Studied

The main features of dairy concerns, both cooperative and others, and their marketing situations that may affect multiquart operations are: location of plant, volume of milk packaged, types and sizes of containers used, and nature of competition.

Location

One or more associations were located in each of 41 states, with as many as 10 in only 7 states. They were distributed fairly well over the nation, with the Rocky Mountain and New England regions having the fewest associations and the North Central region having the greatest number (figure 1).

Urban population exerts more influence on locating fluid milk distributing plants than any other factor. Fluid milk is usually produced near its sales outlet, regardless of conditions which determine areas for production of other dairy products.

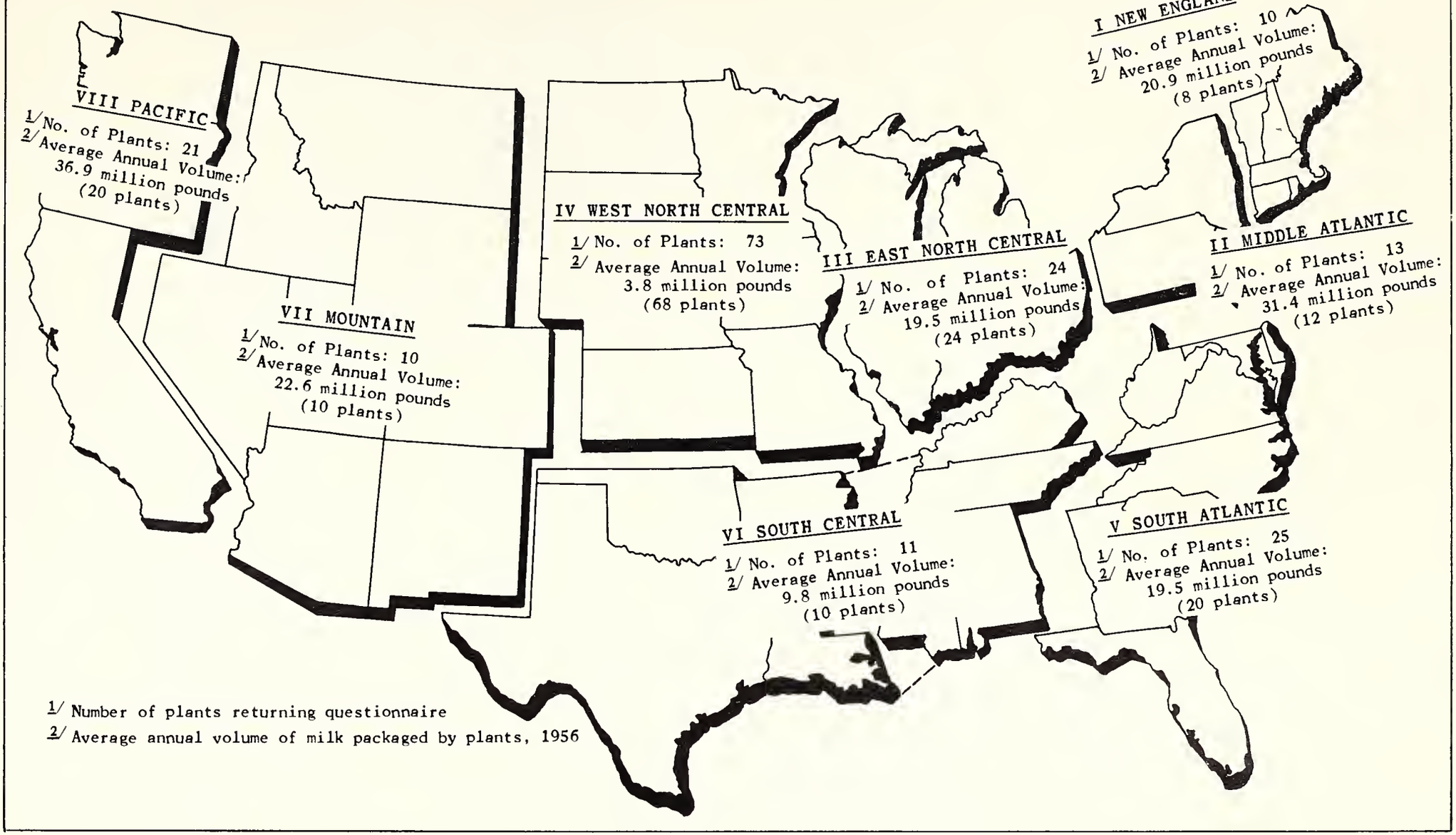
Cooperatives providing data used in this report may be somewhat different from milk plants as a whole in that few of the reporting cooperatives supply milk to the major city markets. The few located near major city markets were primarily specialized packaging and distributing cooperatives -- but rarely near the really large cities. The associations with only a sideline milk business usually were located in small cities or in rural areas (table 1).

Volume

Most of the cooperatives included in this report were relatively small business enterprises, especially when compared with major milk dealers in metropolitan markets. The total volume of milk packaged by each association

[1] According to available information from all sources, an estimated 243 farmer cooperatives packaged and distributed milk in July 1957.

Number of Dairy Cooperatives and Average Volume of Milk Packaged per Cooperative by Region, 1956


I NEW ENGLAND
1/ No. of Plants: 10
2/ Average Annual Volume: 20.9 million pounds (8 plants)
II MIDDLE ATLANTIC
1/ No. of Plants: 13
2/ Average Annual Volume: 31.4 million pounds (12 plants)
III EAST NORTH CENTRAL
1/ No. of Plants: 24
2/ Average Annual Volume: 19.5 million pounds (24 plants)
IV WEST NORTH CENTRAL
1/ No. of Plants: 73
2/ Average Annual Volume: 3.8 million pounds (68 plants)
V SOUTH ATLANTIC
1/ No. of Plants: 25
2/ Average Annual Volume: 19.5 million pounds (20 plants)
VI SOUTH CENTRAL
1/ No. of Plants: 11
2/ Average Annual Volume: 9.8 million pounds (10 plants)
VII MOUNTAIN
1/ No. of Plants: 10
2/ Average Annual Volume: 22.6 million pounds (10 plants)
VIII PACIFIC
1/ No. of Plants: 21
2/ Average Annual Volume: 36.9 million pounds (20 plants)

1/ Number of plants returning questionnaire

2/ Average annual volume of milk packaged by plants, 1956

Table 1. - *Classification of fluid milk distributing cooperatives by size of city in which they were located, 1956*

Population of city	Number of plants reporting	Specialized packaging and distributing associations	Associations packaging and distributing milk as a sideline activity
		Percent	*Percent*
0 - 999	26	3	11
1,000 - 4,999	48	9	17
5,000 - 9,999	25	7	6
10,000 - 49,999	45	18	6
50,000 - 99,999	11	5	1
100,000 and over	32	13	4
Totals	187	55	45

varied widely. In total they packaged approximately 3 billion pounds of milk, or about 6 percent of the country's non-farm fluid consumption in 1956. The average annual volume packaged per cooperative plant in the United States was about 16 million pounds. The average volume of milk packaged per plant in each of the eight areas ranged from 3.8 million pounds annually in the West North Central region to 36.9 million pounds annually in the Pacific Coast region (figure 1).

With one exception, the size of distribution was about the same in each of the areas. The one exception was the West North Central area where most of the plants produced a small volume of packaged milk. Many of these plants had small bottling operations as a sideline to manufacturing.

Containers Used

The paper container is used in virtually all markets, although proportions of milk sold in glass and paper containers vary considerably among markets. The Marketing Research Division, Agricultural Marketing Service, U. S. Department of Agriculture, stated in 1956 that for selected years and selected markets the proportion of fluid milk sold in glass containers varied from 33 to 70 percent.[2]

Ninety-four percent of the cooperatives in our survey packaged some milk

[2]Smith, Helen V., and Herrmann, Louis F. Changing Patterns in Fluid Milk Distribution. Mark. Res. Rep. No. 135, Agricultural Marketing Service, U. S. Dept. of Agr., 38 pp., August 1956.

Nearly 94 percent of the cooperatives used the paper quart container.

in paper containers, while only 74 percent packaged some milk in glass containers. Sixty-eight percent had dual operations with both paper and glass. A small number packaged milk in only one type of container - 26 percent in paper containers only and 6 percent in glass containers only.

Of the concerns that used only glass containers, 6 out of the 10 packaged and distributed less than one million pounds of milk annually. Of the concerns reported packaging over 10 million pounds annually, none used only glass containers (table 2). With one exception the percentage of plants using only paper containers was about the same in each volume category. That exception was found among plants in the 20 to 24.9 million pound category, in which 50 percent of the plants used only paper containers. Half of the associations in this volume category used only paper containers.

According to statistics for the marketing year 1956-57,[3] householders in the United States purchased an estimated total of 15.5 billion quarts of fluid milk as follows: 9.5 billion quarts, or 61.2 percent, in quart containers; 5 billion quarts, or 32.2 percent, in 1/2-gallons; 1 billion quarts, or 6.5 percent, in gallons; and about 13 million quarts, or less than .1 percent, in containers of other sizes.

There are wide differences among individual markets in the proportions of milk sold in multiquart containers (similar to the differences already noted among markets in proportions sold in glass and paper). In selected markets in 1954-55, the proportion of milk sold in multiquart containers varied from 1 to 70 percent.[4] Data on quantity of milk packaged in the various containers by cooperatives in this study are presented in table 3.

The percentage of fluid whole milk packaged and sold in the 1/2-gallon and gallon containers has increased considerably in the past few years, mostly at the expense of quart containers. There

[3]Household Purchases of Fluid Milk, Nonfat Dry Milk, Butter, Margarine by Regions and Retail Sales Outlets, July-Sept. 1957. Agricultural Marketing Service, U. S. Dept. of Agr., 36 pp., Dec. 1957.

[4]Smith, Helen V., and Herrmann, Louis F. Changing Patterns in Fluid Milk Distribution. Mark. Res. Rep. No. 135, Agricultural Marketing Service, U. S. Dept. of Agr., 38 pp., August 1956, p. 27.

Table 2. - *Associations using various types of containers classified according to annual volume of milk distributed, 1956*

Annual volume of milk distributed	Number of associations	Container		
		Paper and glass	Paper only	Glass only
Million pounds		*Percent*		
25 and over	32	75	25	-
20 - 24.9	10	50	50	-
15 - 19.9	11	82	18	-
10 - 14.9	12	67	33	-
5 - 9.9	28	75	21	4
1 - 4.9	40	65	28	7
Under 1	39	64	21	15
Total	[1]172	68	26	6

[1]Fifteen associations did not report total volume distributed.

Table 3. - *Number and percent of 187 dairy cooperatives using various containers, 1956*

Container		Number and percent of plants in each area using various containers																	
		Area[1]									Area[1]								
		I	II	III	IV	V	VI	VII	VIII	Total	I	II	III	IV	V	VI	VII	VIII	Total
		Number									*Percent*								
1/2-Pint	Glass	8	6	19	43	17	7	5	10	115	80	46	79	59	68	64	50	48	61
	Paper	9	13	20	39	23	11	10	17	142	90	100	83	53	92	100	100	81	76
Pint	Glass	3	4	14	23	10	1	-	1	56	30	31	58	32	40	9	-	5	30
	Paper	3	11	14	24	21	8	8	15	104	30	85	58	33	84	73	80	71	56
1/3-Quart	Glass	-	2	3	-	2	-	-	-	7	-	15	13	-	8	-	-	-	4
	Paper	1	6	11	5	3	5	3	5	39	10	46	46	7	12	45	30	24	21
Quart	Glass	9	6	19	50	21	7	5	15	132	90	46	79	68	84	64	50	71	71
	Paper	10	13	24	64	25	11	10	18	175	100	100	100	88	100	100	100	86	94
1/2-Gallon	Glass	2	1	15	26	12	4	4	3	67	20	7	63	36	48	36	40	14	36
	Paper	6	10	21	54	19	10	8	16	144	60	77	88	74	76	91	80	76	77
Gallon	Glass	2	-	11	14	4	1	2	3	37	20	-	46	19	16	9	20	14	20
Total plants		10	13	24	73	25	11	10	21	187									

[1]I-New England; II-Middle Atlantic; III-East North Central; IV-West North Central; V-South Atlanta; VI-South Central; VII-Mountain; VIII-Pacific.

was, for example, an increase in 1956-57 over 1954-55 of 66 percent for 1/2-gallons and 23 percent for gallons in the sale of whole milk. At the same time, there was a decrease of 14 percent for quarts. This is one reason why so many cooperatives felt that they had to have a multiquart operation in order to compete.

Nature of Competition

Although the data on general national practices have shown that multiquart containers are increasing in popularity, they are not yet universally used in the dairy industry. Data on containers used by competitors of the cooperatives in this study show further the environment in which these cooperatives operate. Eighty-five reporting cooperatives sold milk in markets where competitors used both paper and glass 1/2-gallon containers. Seventy-eight sold in markets where competitors used only the paper container for their 1/2-gallon units. Only three reported that the gallon jug was the only multiquart container their competitors used.

Despite the trend toward multiquart containers, the paper quart was still the predominant container in use among the reporting cooperatives, with 94 percent using it. Seventy-seven percent used the 1/2-gallon paper container and 20 percent used the gallon jug. Only 4 percent used the 1/3-quart glass container, making this the least common container in use.

As with many other changes in the dairy industry, the low volume plants felt the impact most severely in the changes in type and size of container. Many were unable to adjust to the changes.

Increasing Significance of Multiquart Containers

Growth in Use

The paper 1/2-gallon milk containers was first introduced in the Los Angeles market around 1940. The glass 1/2-gallon and gallon containers had been introduced much earlier. However, the earliest that any existing cooperative reported having a glass 1/2-gallon container was in 1939. The earliest that any association reported having the gallon jug was in 1946.

During the early stage of adoption, the glass 1/2-gallon and gallon containers were used by some dairies at special dairy stores and generally by farmers who sold their own milk at roadside stands.

Most of the increase in the use of multiquart containers has come in the last 10 years. The volume of fluid milk sold in the 1/2-gallon and gallon containers has increased from a very small percentage of the total fluid milk consumed in 1949 to approximately 40 percent in the 1956-57 marketing year.[5]

Extent of Use

At the time of our survey, 162 of the 187 cooperatives supplying information were using at least one type of multiquart container. Many were using either two or three different types of various combinations.

Among these cooperatives, the quantity of milk packaged in gallons and 1/2-gallons constituted about 2 and 21

[5]Household Purchases of Fluid Milk, Nonfat Dry Milk, Butter, Margarine by Regions and Retail Sales Outlets. July-Sept. 1957. Agricultural Marketing Service, U. S. Dept. of Agr. 36 pp. Dec. 1957.

percent, respectively, of their total volume of packaged milk. The total volume of milk packaged in 1/2-gallon containers by 110 concerns was about 573 million pounds (table 4). Fifty-two associations using 1/2-gallon containers did not report their volume.

The volume of milk packaged in 1/2-gallons per plant varied widely by area. The associations in the Pacific Coast area packaged on the average more than 13 million pounds of milk in 1/2-gallon containers. Recall that Pacific Coast cooperatives also packaged the largest total amount of milk per association. Associations in the South Atlantic area had the lowest average, approximately 2 million pounds.

Nineteen plants reported that they packaged approximately 60 million pounds of milk in gallon containers. Thus each of these plants packaged on the average a little over 3 million pounds in gallon containers.

How and Why Introduced

Managers have often said that dairy firms try to get a foothold in a new market by introducing milk in multiquart containers. However, in our study only 40 percent of the reporting firms said that outside firms introduced multiquart containers into their markets. Sixty percent reported that local firms introduced the multiquart containers into their own markets.

There were broad differences as to who introduced multiquart containers into the various markets throughout the country. In one region, local firms alone introduced multiquart containers. In other regions the percentages varied. In no region, however, did outside firms introduce multiquart containers into as many as 50 percent of the local markets.

The industry has assumed generally that most dairy firms introduced multiquart containers into a market at a lower

Table 4. - *Annual volume of milk packaged in multiquart containers by dairy cooperatives, 1956*

Area	Container			
	1/2-Gallon (110 Cooperatives)		Gallon (19 Cooperatives)	
	Total	Per association	Total	Per association
	Pounds			
New England	17,195,397	4,298,849	(1)	(1)
Middle Atlantic	91,283,974	10,142,664	None	None
East North Central	88,520,694	4,917,816	43,196,846	4,799,650
West North Central	96,383,961	2,604,972	3,533,455	706,691
South Atlantic	30,659,103	2,043,940	(1)	(1)
South Central	23,769,882	3,395,411	None	None
Mountain	66,702,872	8,337,859	(1)	(1)
Pacific	158,792,123	13,232,677	(1)	(1)
Totals and averages	573,308,006	5,211,891	59,978,829	3,156,780

[1]Fewer than 3 plants reporting.

price. The data collected by questionnaires supported this view. Eighty percent of the cooperatives reported that multiquarts were introduced at a lower market price per quart than the current price of the single quart. Twenty percent maintained the same single quart price.

Although the majority of concerns included were using multiquart containers at the time of this study, they generally were not the first to introduce multiquart containers into markets. Why did the cooperatives add multiquart operations? Managers gave a wide variety of reasons which were grouped into four categories.

The largest percentage of managers stated that competition was the reason for adding a multiquart operation. Their competitors were marketing multiquart containers, so they felt compelled to do the same. A number of associations gave more than one reason. The full breakdown on the various reasons cooperatives added multiquart operations is as follows:

	Reason	Percent
1.	To meet competition of another dealer who offered milk in multiquart containers	64
2.	To increase sales by means of a new package	44
3.	To increase sales by means of a lower price	24
4.	To lower processing and distributing costs	21

Influence of Multiquart Containers

The practice of packaging milk in multiquart containers has not only increased capital investment and operating expenses but it has introduced many new problems. Changes made in the processing line complicated the handling

Packaging milk in multiquart containers has not only increased capital investment and operating expenses but has complicated distribution and merchandising practices.

of labor and machines. In addition, multiquart containers brought about changes in distribution and merchandising practices which further complicated managerial problems.

On Plant and Distribution Problems

When a plant changes an operation or adds an operation, the schedule of work changes in the plants and certain problems usually develop. We asked the dairy cooperatives what were their most difficult processing problems when they added multiquart operations. The problem of leakers was at the top of the list (table 5). This would, of course, apply only to those packaging milk in paper. This apparently is a universal problem with 1/2-gallon paper packages, and much more severe than with quart paper packages.

With these problems in mind, we were interested in the opinions of managers on which type of multiquart container was best from either a processing or selling standpoint.

Of 153 managers that expressed a preference from a processing standpoint for a specific type of multiquart container, only 44 were actually using more than one type at the time of the study. Twenty-eight of the 44 cooperatives were using 1/2-gallon paper and 1/2-gallon glass containers, while 16 were using the gallon jug in addition to both types of 1/2-gallon containers.

Many of the managers using only one type of container based their opinions on past experience. Other managers based their opinions on the experience of managers they were well acquainted with.

The preferences of the 153 managers were as follows: 54 percent preferred the paper 1/2-gallon container, 37 percent the glass 1/2-gallon, 9 percent the gallon.

The 28 managers using both paper and glass 1/2-gallon containers generally preferred glass over paper. Sixty-one percent preferred the glass 1/2-gallon and 39 percent the paper 1/2-gallon.

The preferences of the 16 managers using all three types of containers were

Table 5. - *Problems of associations that changed to multiquart operations*

Item	Number of associations	Percent of associations
Total associations replying to question	111	100
Reporting no major problems	19	17
Reporting major problems	92	83
Major problems reported		
Leakers	53	58
Inefficiency in handling new containers	29	32
Problem of equipment adjustment	16	17
Problems of storage (space, etc.)	6	7
Other major problems	5	5
Total problems reported	[1]109	

[1]Some associations reported more than one problem.

Table 6. - *Desirability of various multiquart containers for processing and for distributing milk as reported by dairy cooperatives, 1956*

Type of containers	Most acceptable for processing		Most acceptable for selling	
	(Replies)		(Replies)	
	Number	*Percent*	*Number*	*Percent*
1/2-gallon paper	82	54	113	74
1/2-gallon glass	56	37	28	18
Gallon jug	15	9	12	8
Totals	153	100	153	100

as follows: 44 percent preferred the glass 1/2-gallon container, 31 percent the paper 1/2-gallon, and 25 percent the gallon jug.

The container preferred from a processing standpoint was not necessarily preferred from the distributing standpoint. These views are shown in table 6.

On Processing and Selling Costs

This study was not intended to be a cost study. However, we asked the managers for opinions on their processing and selling costs since adding a multiquart operation.

Since adding the multiquart operation, the total processing costs increased for 38 percent of the firms, decreased for 28 percent, and remained the same for 34 percent.

These percentages can be misleading. The figures above are based on the opinions of managers. There are so many factors to consider when a new process is added that it requires thorough analysis to determine the actual cost increase or decrease resulting from it.

Most costs have risen since many of the cooperatives adopted multiquart containers. This rising price level made the job of reporting the influence of multiquart containers on costs particularly difficult for managers supplying the information used here. A manager can state with reasonable accuracy that costs have moved in a particular direction, but he cannot be sure of the cause unless an intensive study of all factors is made.

A larger percentage of the associations reported increases in total costs than reported increases in processing costs (table 7). Forty-five percent of the associations reported that total costs increased after adding a multiquart operation, 19 percent reported that total costs decreased, and 36 percent reported that total costs did not change significantly. Again these data only reflect opinions. However, in many associations managers are more familiar with total costs than they are with the component parts of total costs.

Although total costs increased after changing operations, the associations' net savings also have increased in some instances. In these cases selling prices might have been increased or the associations might have lowered the advance payment for milk to producers. Also, increases in the volume of milk handled

Table 7. - *Percentage of cooperatives reporting various changes in costs and net margins after adding multiquart containers, 1956*

Costs	Decrease	Increase	No change
		Percent	
Total processing costs (Including overhead)	30	38	32
Total delivery and selling costs (Including overhead)			
Wholesale	18	26	56
Retail	12	26	62
Total operating cost	19	45	36
Net margins	35	29	36

might have reduced handling costs per unit and therefore resulted in greater net savings.

While only 18 percent of the associations showed a decrease in total cost, 30 percent showed an increase in net margins. Again while 45 percent of the associations showed an increase in total costs, only 35 percent showed a decrease in net margins. Thirty-six percent of the associations showed no change in either total cost or net margins.

Even when an association showed a decrease in net margins, it did not necessarily mean that the producer-patrons were worse off than before. The policy of the cooperative might have been to deliberately decrease net margins by advancing a higher partial payment for milk. Thus, knowing only the processing and selling costs and the net margins, one is limited in comparing the returns to producers from one period to another.

On Sales Policies and Practices

Milk distributing cooperatives at the time of this study were using a variety of trade channels in moving their packaged milk and other dairy products to consumers. These channels included house-to-house retail milk routes owned and operated by the associations and similar routes operated by independent route men, sometimes known as vendors. Other channels included grocery, dairy, and other stores, and hotels, restaurants, drug store fountains, and similar commercial users of dairy products.

As a basis for classifying the methods cooperatives used in marketing packaged milk, four categories were set up:

1. Distribution by plant. -- Refers to distribution of packaged milk without change of ownership until it is sold to a household or retail store. This milk bears the brand name of the plant in which it is packaged. From the distribution standpoint, the milk is delivered on regular wholesale and retail routes, both local and outside.

2. Sale to local dealers. -- Refers to the sale of milk that carries the brand name of the plant that packages it, but is handled by another plant for distribution. The local dealer may sell the milk to all types of sales outlets.

3. Custom packaged. -- Refers to the sale of milk by packaging plant using the brand name of another.

4. Sale to vendors. -- Refers to the sale of milk under the brand name of the packaging plant to independent routemen. The distinction between local dealers and vendors depends solely on whether the milk purchased by the distributor is delivered at his place of business or at the plant.

Distribution by the association was the most frequently used method (table 8). Ninety-seven percent of the associations who distributed milk in multiquart containers marketed part or all of their milk through their own routes. Of the 132 cooperatives, 95 percent used wholesale routes, and 88 percent used retail routes.

We also asked cooperatives which outlets accounted for their largest sales volume. Sixty-eight percent of the cooperatives listed stores, 29 percent listed home delivery, and only 3 percent listed other sales outlets. The stress of sales to stores may be a big inducement to use paper containers, to eliminate the problem of bottle returns, and to use half gallons, since the quantity purchase idea is stressed in grocery merchandising.

Sixty-eight percent of the distributing cooperative sold milk in multiquart containers to other dealers. Seventy-one and 70 percent of the associations in the West North Central and the South Atlantic regions, respectively, sold milk in multiquart containers to local dealers.

Half the cooperatives in the East North Central region using multiquart containers sold milk to vendors. Cooperatives in New England and the Middle Atlantic regions reported no sales of milk in multiquart containers to vendors.

Thirty-two percent of all the associations custom packaged part of their milk in multiquart containers. Associations in the Middle Atlantic region made the most extensive use of custom packaging, where 78 percent packaged milk in multiquart containers under custom labels.

Several cooperatives included in the present study used all four of these methods of distributing milk in multi-

Table 8. - *Extent of use of the various methods of distributing milk in multiquart containers by dairy cooperatives, 1956*

Method of distribution	Associations	
	(Number)	*(Percent)*
Total firms reporting	136	100
Association routes	132	97
Wholesale [1]126		
Retail [1]116		
Local dealers	93	68
Custom packaged	46	34
Vendors	33	24

[1]Some associations did not have both wholesale and retail routes.

Table 9. - *Extent of use for various combinations of methods of distributing milk in multiquart containers by cooperatives, 1956*

Method combinations	Percent of usage
One method exclusively	29
Combination of two methods	33
Combination of three methods	26
Combination of four methods	12
Total	100

quart containers. Some used only one of the methods while others used various combinations (table 9).

Over three-fourths of the 136[6] cooperatives that reported their distribution of milk in multiquart containers distributed milk in both outside and local markets (table 10). However, only one association distributed milk exclusively in outside markets.

Half of the associations sold multiquart containers on both wholesale and retail routes in outside markets. A fourth put the large containers on wholesale routes only. Some of this group selling wholesale did not use outside retail routes at all, and others chose not to put the large containers on retail routes.

[6]Twenty-six cooperatives packaging in multiquart containers did not report their methods of distribution.

Table 10. - *Extent of local and outside market distribution of milk in multiquart containers by 136 cooperatives, 1956*

Distribution	Associations	
	Number	*Percent*
No route sales	4	3
Local routes		
Wholesale and retail routes	104	76
Wholesale routes only	21	16
Retail routes only	6	4
Total	131	96
Outside routes		
Wholesale and retail routes	71	52
Wholesale routes only	34	25
Retail routes only	-	-
Total	105	77

On Sales Volume and Consumption

Two-thirds of the associations reported that one of their principal reasons for adding a multiquart operation was to increase sales. But did these new operations succeed in increasing sales? After they had added the multiquart container, four-fifths of the cooperatives showed an increase of total sales. However, these sales increases included in unknown proportions the influence of natural growth or increased salesmanship as well as the influence of adding multiquart containers.

The effect of multiquart containers on per capita consumption has as much or more importance to the dairy industry as increased sales of the individual plants. About 70 percent of the managers of associations thought that milk consumption increased when milk in multiquart containers was available to consumers. About 30 percent of the managers saw no change in milk consumption by consumers after multiquart containers were available.

Although we did not request the information, many managers offered their reasons on why multiquart containers increased consumption. Some managers said that consumption was increased because consumers would have more milk on hand with the larger container and therefore would unconsciously use more milk. Others thought consumption was increased primarily because of the price incentive. These opinions seem to be in conflict with the actual trend in per capita consumption.

It is difficult to measure the effect of any single factor on per capita consumption of milk. For the last four years, the per capita consumption of packaged fluid milk has increased slightly. What influence, if any, the multiquart container has had on this change in per capita consumption is unknown.

On Methods of Competing

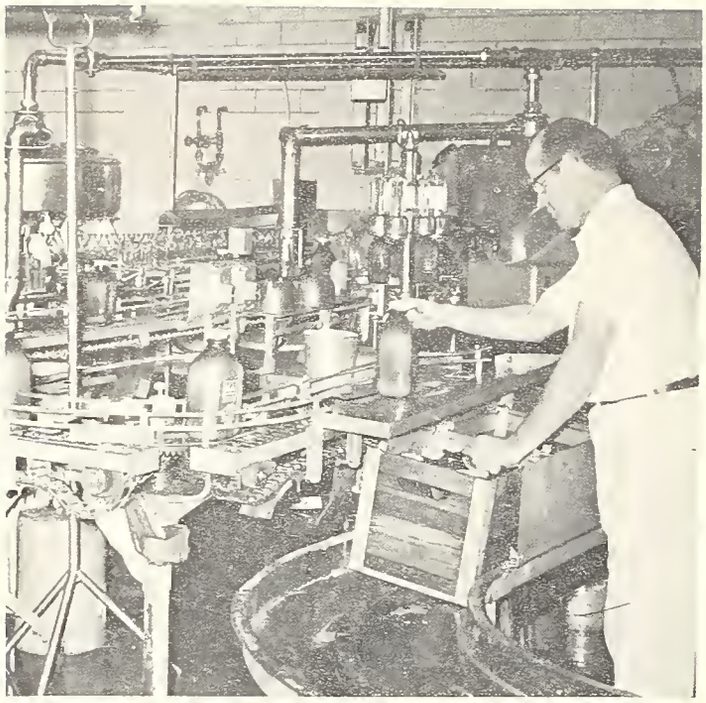
Among those plants that did not package milk in multiquart containers, there were four major methods of competing with dealers who did. Dealers equipped for packaging only single quarts met the 1/2-gallon competion by using twin-paks (two quart milk containers packaged and sold as one unit). There were several devices for binding together two single quarts.

Of the 35 reporting associations selling twin-paks, few of them felt that twin-paks could compete effectively with 1/2-gallon or gallon containers. A few of the managers, however, did not go along with the majority view and were quite positive that twin-paks could compete with multiquart containers.

A slightly different approach in the use of twin-paks taken by some associations was to use twin-paks for the wholesale trade and glass 1/2-gallon containers for retail routes. It was a common view that a price reduction was necessary to move the twin-paks effectively.

This price cutting was comparable to the second major method of competing -- quantity discounting. Numerous studies have been made and articles written on the effects of quantity discounts. The consensus of these studies and articles has been that quantity discounts can under certain conditions successfully compete with multiquart containers. However, only a few of the associations stated that these discounts could compete effectively with multiquart containers.

The third method of competing with multiquart containers was to meet competition head-on with 1/2-gallon or gallon containers. It was the consensus of the associations that this was the best



With the growing use of multiquart containers, more and more cooperatives will find it necessary to add a multiquart operation.

method to meet competition. This is probably the most effective method for plants of medium and large volumes. For plants of low volume, however, this may only prolong a poor situation. If a plant cannot lower costs by adding a multiquart operation, or at least cannot maintain a cost within the range experienced by competing plants, it is indeed in trouble.

The fourth method, principally for small-volume plants, was to purchase milk packaged in 1/2-gallon or gallon containers from another dealer to supplement its line of products. Only seven of the cooperatives in the study were doing this, however. This method was used in a few cases even among plants that were competing directly for the same market. Perhaps it is best for an association using this method to purchase milk from another dealer not in direct competition with it.

About 10 percent of the cooperatives stated that they were planning to add a multiquart operation. However, many of these already had one type of multiquart container, either 1/2-gallon or gallon, and were planning to add another type.

With the growing use of the multiquart container, more and more cooperatives will find it necessary to add a multiquart operation. If producer-patrons are to gain the greatest benefits from this change, cooperatives must thoroughly investigate all the problems associated with multiquart containers before undertaking such an operation.

A full realization of the cost structure of the cooperative and the effect of multiquart containers on that structure will have to be known. Whether a cooperative should bottle milk in multiquart containers in their own plants or have milk custom packaged by another cooperative or dealer can be answered only after the costs are fully known. Perhaps the important factor was summed up best by the manager who said, "Volume is the key to success with a multiquart operation."

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